

*Bowen (J. T.)*  
*With the writer's compliments.*

CASES OF CUTANEOUS TUBERCU-  
LOSIS, WITH HISTOLOGICAL  
STUDIES.

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## CASES OF CUTANEOUS TUBERCULOSIS, WITH HISTOLOGICAL STUDIES.\*

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CASES of cutaneous tuberculosis have been frequently reported where the microscope detected the specific bacillus, although the clinical appearances were not distinctive of any recognized form of this disease. On looking over the literature, one finds many cases where little attempt at clinical description is made, the writers contenting themselves with the statement that a nodule, or other appearance, was observed, and, suspicion having been aroused by some peculiar circumstance, an examination with the microscope has revealed the efficient cause. In point of fact, the time, it seems to me, has not yet come for a thorough classification of the various forms. We need more data, more carefully recorded observations, more microscopical examinations studied in connection with the clinical phenomena, before we can determine how many of the cutaneous lesions formerly regarded as doubtful or put under other headings belong in this class. *Per contra*, one may not be accused of too great a skepticism if the question be raised whether, as always happens when much new light is suddenly thrown upon a subject, we are not inclined to embrace in this class cases where the evidence of their tubercular nature is insufficient. Therefore the cases that I shall report are presented in the light of studies, with the hope that they may represent some slight contribution to the subject. Those cases in which the bacillus was not looked for, or was looked for in vain, were classed under this head only after careful study and after an elimination of all other affections had been made. The cases were all observed at the skin depart-

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\* Part of a paper read at the fourteenth annual meeting of the American Dermatological Association, at Richfield Springs, New York.



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ment of the Massachusetts General Hospital, and it is to the courtesy of Dr. J. C. White that I am indebted for permission to obtain the material for microscopical study in several of them, and to report them in this connection.

Apart from lupus and the deeper seated lesions of so-called scrofuloderma, two forms of cutaneous tuberculosis have been accurately described and pretty generally accepted—viz., the rare miliary form, situated, as a rule, at the outlet of the mucous cavities and associated with serious internal lesions, and the tuberculosis verrucosa cutis of Riehl and Paltauf.

Tuberculosis verrucosa cutis is now so well recognized that only a brief description for the sake of completeness is necessary. This affection, to which attention was called in 1886, is characterized by plaques situated chiefly on the backs of the hands, arms, and fingers, looking at first sight like a cluster of inflamed warts. These patches are rounded or more or less oval in shape, occasionally assuming serpiginous forms by confluence. In typical cases there is seen at the borders of the plaques an erythematous ring, within this a row of small superficial pustules, situated on a slightly infiltrated base, while the prominent center is occupied by a warty outgrowth covered with crusts and horny epidermis, and between the papillary outgrowths are erosions and pustules. The affection occurred chiefly in persons of adult age, in good health, who were brought into contact, from their occupation, with animals or animal products. The brown-red nodules so typical of lupus are not seen in this form. The verruca necrogenica, so often found on the hands of those working in dissecting-rooms or at the autopsy-table, is nearly, if not quite, identical.

### I.

#### *Cases of Typical Tuberculosis Verrucosa Cutis Riehl.*

CASE I.—W. D., male, aged twenty-four, June 8, 1889. The lesion, which corresponds with the well-known appearances of tuberculosis verrucosa cutis in every particular, is situated on the back of the hand over the metacarpals. The patch appeared first five years ago, while the patient was employed in the care of cattle on board a transatlantic cattle ship. It has never disappeared, but has increased very slowly.

This case is reported simply on account of the probable mode of infection, it being the second case observed by the writer where men employed on cattle ships were affected. It would not be surprising if it were found to be a pretty common affection in men of this class, as no better opportunity for inoculation can be conceived of than that offered by this occupation.

CASE II.—H. B., female, aged sixty-five, June 16, 1890. Patient presents a circumscribed, bluish-red, warty growth, with purulent foci, on the back of the last phalanx of the index finger—a typical Riehl. Over the



metacarpals of the same hand a diffuse, soft, bluish-red infiltration, extending pretty deeply into the subcutaneous tissues—a so-called scrofuloderma or gomme scrofulouse. The warty patch first described made its appearance three years ago, while the patient was nursing a daughter ill with phthisis, who subsequently died. The woman is otherwise healthy, large, and stout. No marked glandular enlargements.

CASE III.—J. Y., female, aged fifty-eight. All her family died of phthisis. On the back of the finger of the right hand a typical tuberculosis verrucosa cutis. This appeared about two years ago, at the time of the death of a daughter who had been ill with phthisis, and whose soiled handkerchiefs and clothing she had been in the habit of washing.

Cases II and III are interesting from their similarity. In each a middle-aged woman presents on the back of the finger a patch of tuberculosis verrucosa cutis, and in each case the time of its appearance coincides with the period when the patient was taking care of a phthisical daughter. In Case II a further point of interest is the subsequent appearance of a gomme scrofulouse on the back of the hand, an association that has, it is true, been noted before.

## II.

*Cases of Cutaneous Tuberculosis in Young Subjects, consisting of sharply raised, reddish-blue Nodules, sometimes Confluent, usually, but not always, with a Warty Surface, resembling Tuberculosis Verrucosa Cutis Riehl, situated chiefly on the Backs of the Hands, Elbows, and Knees.*

CASE IV.—K. G., female, aged sixteen, July 17, 1889; born in England. No record of phthisis in any member of the family can be discovered. Patient has not been with any consumptive subject. General health and appearance good. Two years ago, while working in a spinning-mill in Lancashire, she bruised her elbow against one of the machines. The present trouble then made its appearance, at first in the form of a small tubercle, and it has steadily increased in size. She now presents on the right elbow a patch of the size of a large silver dollar, slightly raised above the level of the normal skin, yielding and soft to the touch. The upper part of the patch is made up of a diffuse infiltration, which is shown by the touch to lie in the subepidermal structures, while the epidermis over it is thickened and of a slightly warty appearance. In the lower portion are several detached nodules the size of a pea, without warty change or epidermal thickening, resembling much a large papule of syphilis, but differing from it in that they are softer and less resistant to the touch. There is some atrophy of the skin between these tubercles. The color of the patch is a bluish red. The plaques were treated with mercurial plaster, worn continuously. Under this treatment they diminished in thickness, and there was a gradual improvement taking place when the patient was lost sight of about two months later.

*Histological Examination.*—A small piece was excised and hardened in alcohol. Sections made through the whole piece after imbedding in



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celloidine gave the following picture: The stratum corneum thickened, but not, in the piece examined, showing any warty prolongations. There is, however, a marked epithelial proliferation, the rete sending deep prolongations into the corium, whose papillæ are elongated. In the upper portions of the corium, directly beneath the rete, are seen enlarged vessels and lacunæ in the connective tissue, together with a fine-celled infiltration. In this papillary layer there are seen clusters of large and small Langhans giant cells, with peripheral nuclei and necrotic center, and interspersed between them epithelioid and round cells. At the border of the clusters the round cells are found in dense masses. The giant cells were found in great numbers in each section examined. The lower layers of the corium appear normal. Sections were stained by Ehrlich's method for the tubercle bacillus and examined with much care. None could be detected in the first thirteen sections examined. In the fourteenth, two bacilli were found, one at the periphery of a Langhans cell, and further search revealed others very sparingly disseminated.

CASE V.—F. C., male, aged seven years, September 21, 1889. Was well until seven months ago, when he had what was called pneumonia. Soon afterward he began to have trouble over the wrist of one hand, which now presents a typical scrofuloderma. A short time after the trouble with the wrist began there appeared lesions of the skin of the knee and elbow. He now has, in addition to the scrofulous affection of the wrist, several sharply raised circular patches on the left knee and left elbow, which are found to consist of a soft sub-epidermal infiltration, covered by a thickened scaling epidermis, with some small papillomatous projections, which give a slightly warty appearance to the nodule. These nodules average half an inch in diameter and have a deep-reddish color.



FIG. 1.

*Microscopical Examination of Piece excised.*—Stratum corneum thickened. The rete everywhere prolonged into the corium and branched in



various directions. No marked corneal projections, but in places where the rete plugs have proliferated deeply the stratum corneum seen to dip well down into these prolongations. Eleidine zone increased in thickness. Papillæ elongated, vessels dilated. A moderate round-celled infiltration seen, as a rule, in the papillæ. In the papillary layer of the corium, just beneath the rete prolongations, are clusters of round cells inclosing larger epithelioid and an occasional large Langhans giant cell. The Langhans cells are not seen in every section, it being necessary sometimes to search through a number of specimens before they are found. In several of the foci, besides the epithelioid and giant cells, there is seen a collection of deeply stained granula, and the cell contours are not quite so sharply defined as usual.

Sections were stained for the tubercle bacillus by Ehrlich's method. None were detected in the fourteen sections examined, when the search had to be abandoned from lack of material.

CASE VI.—A. C., female, aged six years, September 21, 1889, sister of F. C. (Case V). The children slept together at the time the tubercular joint affection occurred in the brother. As far as the mother can remember, the present lesions appeared at the same time that the warty nodules were observed on the boy—*i. e.*, five or six months ago. The appearances in this case are precisely similar to those in Case V, with the exception that the nodules are somewhat smaller. On elbows and knees appear these same reddish-blue, sharply raised, papillomatous nodules, without trace of ulceration or suppuration, yielding to the touch; not painful. The child is otherwise apparently healthy. No microscopical examination of this case could be made.

These two children were not seen again until August, 1890. The patch of scrofuloderma on F. C.'s wrist had healed, leaving a characteristic scar. Of the warty plaques, several had disappeared entirely, leaving a smooth, superficial cicatrix. All were less prominent, and no new ones had appeared. The treatment, which was the application of a five-per-cent. white precipitate ointment and a mild salicylic-acid ointment, had been kept up for a short time only.

The plaques on the skin of A. C. (Case VI) had also in part disappeared, leaving a slight depression and atrophy. The child had lost much flesh and strength, and had a distressing cough. Physical examination showed well-marked lesions at the right apex.

CASE VII.—J. M., female, aged nineteen months, October 8, 1889. Uncertainty as to when the affection began. Mother thinks there have been some lesions for five or six months, but is not sure. Was always a delicate child. Mother's sister-in-law was in the house ill with consumption for three months, and died one month ago. Child has had a cough for some time. Present state: on the backs of the fingers of both hands are bluish-red, papular lesions the size of a large pea; raised, slightly warty on the surface



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in some instances, in others smooth. On the thighs, papules of about the same size, not warty, soft to the touch, bluish-red in color, not fading on pressure. No history of syphilis.

*Histological Examination.*—The stratum corneum thickened as in the other cases, in one or two places dipping down deeply into the epithelial plugs. The eleidine layer is increased in thickness. The rete has pushed itself deeply down into the corium in the area of the nodule, and the papillæ are much elongated. There is no more inflammatory small-celled infiltration than one sees in the vicinity of any chronic process. Imme-

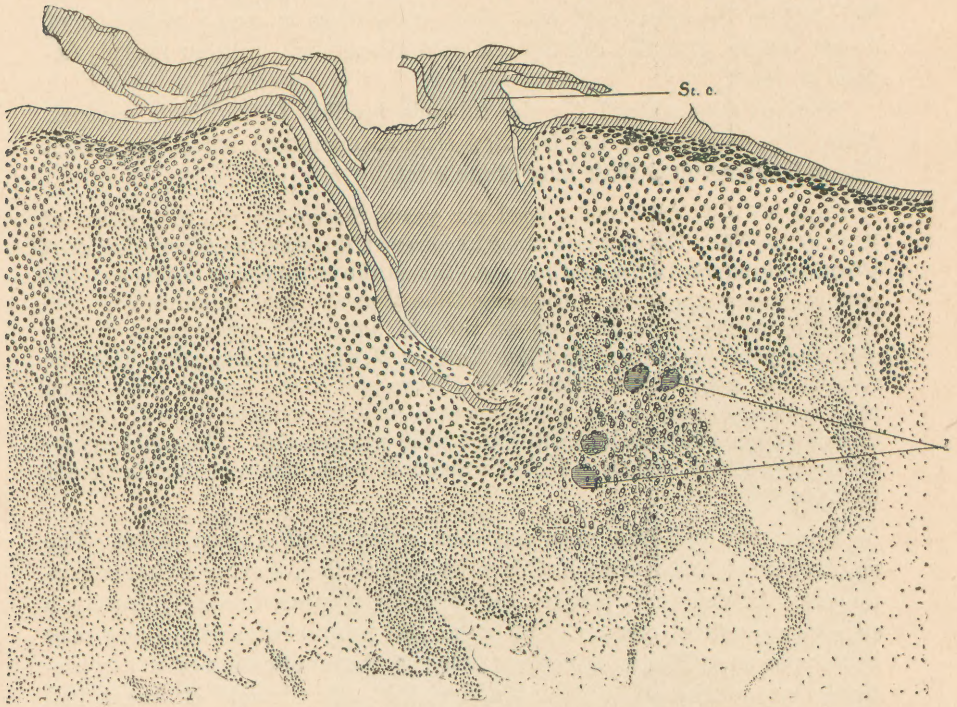


FIG. 2.

*St. c.*, Horny plug of thickened stratum corneum ; *L*, Langhans giant cells.

diately under the rete, especially in places where the horny plugs extend downward into the corium, are clusters of round, epithelioid, and Langhans giant cells. The giant cells are pretty numerous, being seen in every section examined. In the papule examined the sweat glands seem unusually prominent and numerous, but not abnormally changed. The foci of epithelial and round cells lie in the very highest layers of the corium, in the papillæ themselves.

On staining by Ehrlich's method, the tubercle bacillus was found in the sixth section examined, a result that was verified by further search.



Cases IV, V, VI, and VII presented, clinically, the same appearances. The papillomatous element in all was very slight, and often wanting. They may be described as sharply rounded, reddish-blue nodules, consisting of an infiltration of the subepidermal tissue, soft to the touch, with, in many cases, the addition of a papillomatous condition of the surface. They differ from a large papule of syphilis in the feel—they are so much less resistant to pressure. The color, also a bluish-red, may be considered as somewhat characteristic, as it resembles that seen in the deeper-seated lesions of scrofuloderma. They may, as illustrated by Case IV, become confluent and form larger patches. As will be seen, they resemble the tuberculosis verrucosa cutis of Riehl, and it is in this class they should be placed. They differ from Riehl's description in that they have occurred in those cases that I have observed chiefly in young subjects, in the absence of purulent foci, and in their less marked warty character.

Turning now to the histological characteristics, we have an increase in the thickness of the horny layer, a proliferation of the rete into the corium, an elongation of the papillæ, which contain dilated vessels and a moderate infiltration of round cells, and, as the most prominent feature, clusters of epithelioid, lymphoid, and Langhans cells in the upper part of the corium, immediately below the rete. The number of tubercle bacilli found was very small, requiring protracted search, and resembling in this respect those found in true lupus, where one has often to examine a long series of sections before finding a single example of this micro-organism. The small abscesses found in tuberculosis verrucosa cutis were not seen in the sections I have examined, nor was there any sign of cheesy degeneration in the center of the foci of epithelial and giant cells. They resemble histologically Riehl's description of the youngest part of the plaques of tuberculosis verrucosa cutis, which represents the early stage of the tubercular process, before the papillomatous character has become marked. In those cases that I have examined they differ from Riehl's cases in the paucity of bacilli also.

A number of other cases were also observed, which offered the same appearances to the eye and were believed to belong to the same class, although no careful study was made. In some of them the association with a gomme scrofulense could be verified.

The clinical features of this form have, it seems to me, been pretty accurately described by Dr. McCall Anderson in 1868, under the name of lupus verrucosus, or scrofuloderma verrucosum.\* According to his description, lupus verrucosus always occurs in "strumous" subjects, and exhibits generally a warty formation on its surface. It begins by the development of small, circumscribed, dusky-red or violet patches, often in the form of tubercles about the size of a split pea or bean. Sometimes these

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\* Journal of Cut. Med. and Dis. of the Skin, London, 1868.



are isolated, oftener confluent, so as to form patches of irregular outline and of variable size. They may subside without undergoing a further development, or may advance to suppuration, but in the majority of instances they become covered with wart-like excrescences, and then these violet-colored warty patches present an appearance that once seen can never be mistaken or forgotten. The warty formation can be readily picked off, but a new excrescence gradually grows in its place. The patches beneath the excrescences are *not ulcerated*, but the papillæ are hypertrophied. Its course is chronic. As the general health improves, either from natural causes or from the influence of treatment, the warty excrescences fall off, the patches become less elevated, and finally a white cicatrix is left. This form is met with among half-starved and neglected children. It occurs usually on the extremities, especially on and in the neighborhood of the hands and feet. He further says: "I have been led to understand that similar appearances to the above have been not uncommonly observed in Paris on the hands of medical students, and that, from a supposed connection between the eruptions and the poison emanating from the dead bodies in the dissecting-rooms, the term *tuberculum anatomicum* has been applied to it." It is of comparatively rare occurrence, for among 5,174 cases of skin disease it occurred but nine times. The prognosis is favorable, and it is not so slow in disappearing as is *lupus vulgaris*.

Under the title of *lupus scléreux*, Vidal \* has published a description of an affection which he considers to be a form of lupus, and regards as the same as McCall Anderson's *lupus verrucosus* and the *lupus papillaris*, *verrucosus* of Kaposi.

He describes two forms, a primitive and a secondary form. The latter is the more frequent and is produced from a tubercular lupus when the latter assumes a papillomatous character. The primitive form appears as reddish patches, which increase in size and take on a verrucous, papillomatous character, with fissures and ulcerations. Pus may often be pressed from the deeper portions. A cicatrix forms in the center of the patch, which progresses toward the periphery, following the lupus tissue in its serpiginous spread. Exceptionally the patches may heal spontaneously. Its seats of predilection are the extremities, hands, and feet, and it occurs on the face.

The histological investigations of Leloir and Vidal showed a papillomatous condition, with epithelial proliferation, and a fibrous transformation which affects at first the periphery of a primitive nodule, then penetrates into it, and divides it by the prolongations of fibrous tissue. The sclerosis continues, and finally the whole nodule is transformed into fibrous tissue.

Clinically there are points of similarity, as will be seen, between this

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\* *Annales de dermat. et de syph.*, Paris, 1883, p. 414.



primitive form of Vidal's lupus scléreux and McCall Anderson's lupus verrucosus, as well as with the cases reported by the writer. As to the secondary form, that certainly can not be confounded with McCall Anderson's affection. Anderson expressly says: "In some cases of lupus exedens (or lupus vulgaris in the stage of ulceration) we observe a warty formation developed from the drying up of the ulcerations. This is the scrofulide ver-rugueuse of Hardy, is only a secondary formation, has no claim to a separate name, and is quite distinct from the disease in question." From this it is plainly seen that Anderson recognized the papillary hypertrophy that lupus ulcers (in common with those of other pathological conditions) may take on, and to which Kaposi has given the name lupus papillaris, verrucosus; and he distinctly states that *his* lupus verrucosus is not to be confounded with this form, as there is an absence of ulceration in all his cases. As to the fibrous transformation that occurs in lupus scléreux, it was not at least prominent in the cases above reported, nor is it mentioned by Riehl.

It seems to me, therefore, that the cases I have reported represent the affection described by McCall Anderson as lupus verrucosus. In the light, however, of later work, I think their place is with the tuberculosis verrucosa of Riehl, and that the lesions represent the result of a local inoculation of tuberculosis on the skin of (usually) young subjects. Anderson, it will be remembered, speaks of the similarity of his lupus verrucosus to the verruca necrogenica, which is now considered to be a verrucous tuberculosis from local inoculation; and I find that Dr. P. A. Morrow, in a paper entitled Tuberculosis Papillomatosa Cutis,\* refers to the resemblance between the description of McCall Anderson's lupus verrucosus and Riehl's tuberculosis verrucosa cutis.

I do not consider the cases I have collected sufficiently numerous to compile from them an exact description of the appearances of this variety. A larger experience may show that in some instances they assume the character of a typical tuberculosis verrucosa Riehl, or that forms more nearly resembling true lupus may occur. While the small pieces that I have been able to examine showed some histological variations, the main features accord with Riehl's, in that we find a papillary hypertrophy with proliferation of the rete, not preceded by ulceration, together with nodules of granulation tissue, of the type of tubercle, situated in the upper part of the corium directly beneath the rete.

In their clinical appearances also these cases bear a marked resemblance to those of Riehl and to the verruca necrogenica, or anatomical wart which is identical with tuberculosis verrucosa cutis.

As to the mode of infection, McCall Anderson's cases occurred commonly in strumous children. Of those that I have reported, in one

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\* Journal of Cutaneous and Genito-Urinary Diseases, October, 1888.

there was a history of a bruise, which, it must be assumed, was in some way infected with tuberculous virus. In the case of the brother and sister there was associated a scrofuloderma and probable tubercular affection of the joint in the boy, and the girl exhibited soon afterward a rapidly progressing tuberculosis of the lungs. The two children had slept together at the time the boy's wrist was in a state of open ulceration, and shortly afterward the verrucous lesions had appeared upon both. In Case VII there had been a consumptive patient living in the same room at the time of the appearance of the affection of the skin.

[Since writing this article the author has noticed in the Bulletin de la société française de dermatologie et de syphiligraphie the report of two cases of cutaneous tuberculosis in children shown to the society by M. Sevestre, April 11, 1890.

M. Sevestre considers that they are examples of the verrucous tuberculosis of Riehl, and M. Besnier prefers to classify them under the head of scrofulo-tuberculose.]











